

## CLAIMS

We claim:

1. A wheelchair comprising:

a wheelchair body;

at least two supporting wheels rotatably secured to the wheelchair body;

at least one propulsion mechanism, each propulsion mechanism comprising:

a sun gear rigidly mounted to the wheelchair body and having a first effective diameter;

a planet gear having a second effective diameter, the second diameter being one half the first effective diameter and the planet gear rotationally linked to the sun gear;

a grippable handle rigidly connected to the planet gear;

a drive gear coaxial with the sun gear and rotatably secured to the wheelchair body and linked to at least one of the wheels; and

the planet gear connected to the drive gear;

such that motion of the handle rotates wheels.

2. A wheelchair according to claim 1 and wherein:

the handle has a reciprocating input path.

3. A wheelchair according to claim 2, and wherein:

the reciprocating input path is a straight line.

4. A wheelchair according to claim 2, and wherein:

the reciprocating input path has an elliptical shape.

5. A wheelchair according to claim 4, and further comprising:

an included angle between the elliptical input path major axis and the horizontal axis; the included angle greater than zero degrees.

6. A wheelchair comprising:

a wheelchair body;

at least a first and a second wheel, each rotatably secured to the wheelchair body and supporting the wheelchair body;

a first and second input handle each having a respective reciprocating input path;

a first propulsion means for propelling the first wheel when the first input handle is moved;

a second propulsion means for propelling the second wheel when the second input handle is moved.

7. A wheelchair according to claim 6, and wherein:

the first and second input handle input path each have an elliptical shape.

8. A wheelchair according to claim 7, and further comprising:

an included angle between the elliptical input path major axis and the horizontal axis; the included angle greater than zero degrees.

9. A wheelchair according to claim 6, and wherein:

the first and second input handle input path each being a straight line.

10. A wheelchair according to claim 9, and further comprising:

an included angle between the input path and the horizontal axis; the included angle greater than zero degrees.

11. A wheelchair comprising:

a wheelchair body;

a first and a second supporting wheel rotatably secured to the wheelchair body;

a first and a second propulsion mechanism, each secured to the wheelchair body and each connected to one of the wheels to rotate the respective wheel;

each propulsion mechanism having a respective input handle moveable in a reciprocating path to continuously operate the associated propulsion mechanism and thereby

continuously rotate the respective wheel.

12. A wheelchair according to claim 11, and wherein:

each input path defines an ellipse having a major axis.

13. A wheelchair according to claim 12, and further comprising:

an included angle between the major axis and the horizontal axis; the included angle greater than zero degrees.

14. A wheelchair propulsion mechanism comprising:

a drive sprocket rotatably mounted on a center shaft;

a grippable handle;

propulsive means for guiding the handle on a reciprocating input path, the propulsive means including a means of rotating the drive sprocket continuously when the handle is moved through the input path.

15. A wheelchair propulsion mechanism according to claim 14, wherein:

the input path has an elliptical shape.

16. A wheelchair propulsion mechanism according to claim 14, wherein:

the input path is a straight line.

17. A wheelchair propulsion mechanism according to claim 14, wherein:

the propulsive means comprises:

a sun gear rigidly secured to the center shaft;

a planet gear rotationally linked to the sun gear and supported from the drive sprocket at a fixed radial distance from the sun gear;

the handle secured to the planet gear at a radial distance from the planet gear.

18. A wheelchair propulsion mechanism according to claim 14, and further comprising:

a wheel sprocket configured to be mounted to a wheelchair wheel; and  
a connecting chain configured to connect the drive sprocket and wheel sprocket.

19. In a wheelchair having at least two supporting wheels, the improvement comprising:
- 5       at least one propulsion mechanism having an input handle adapted to be grasped by a  
          human user,  
      each propulsion mechanism linked to drive at least one of the supporting wheels; and  
      the handle having a reciprocating input path.

- 10   20. An improved wheelchair according to claim 19, wherein:  
      the reciprocating input path has an elliptical shape.